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# USSR Report

AGRICULTURE



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28 February 1984

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AGRICULTURE**

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## LIVESTOCK FEED PROCUREMENT

### APPLICATION OF FEED PRESERVATIVES PROBLEM IN RSFSR

Moscow SEL'SKAYA ZHIZN' in Russian 18 Jan 84 p 2

/Article by A. Komarov, chief of the Administration of Chemicalization for Animal Husbandry of the Rossel'khozkhimiya Association: "Preservatives for Feed" /

/Text/ Livestock breeders on many farms have become convinced in practice that the application of chemical additives is the cheapest method of improving rations and of sharply increasing the return on fodder. Every ruble allocated for the purchase and utilization of such additives yields additional farm output worth 7 to 10 rubles. It is also important that the application of synthetic nitrogen substances and phosphates is three times as effective as in plant growing. For example, silage preservation enables kolkhozes and sovkhozes in the Russian Federation to additionally obtain about  $\frac{1}{2}$  million tons of milk, or tens of thousands of tons of meat. The application of preservatives in corn silaging makes it possible to lower nutrient losses to one-half or one-third and to additionally obtain 20 to 40 feed units, 4 to 6 kg of digestible protein, 10 to 15 kg of sugar and 15 to 25 kg of carotene per ton of feed. That is why before the end of the five-year plan the procurement of silage enriched with nutritive additives is to be tripled.

The application of liquid ammonia gives a high economic effect. The mechanized detachments of the Scientific Production Association for Agrochemical Services to Agriculture have treated 1.5 million tons of straw with it, destroying mold and other fungi in it, as well as rodents, and increasing its nutritiousness 1.5- to 2-fold. This method is applied to an ever greater extent on kolkhozes and sovkhozes in Kuybyshev, Gorkiy, Saratov, Tambov and some other oblasts and in the Bashkir and Tatar autonomous republics.

And if the coarse and succulent feed stored for wintering proves to be of a low quality on a specific farm year after year, often this is only because the accumulated experience in its preservation is not applied quite actively here. It happens that farms violate the most elementary requirements of the technology of feed preservation. This happens mostly because of ignorance of this matter. As a result, chemicals are not utilized correctly, do not give an economic effect and only increase the cost of output. That is why it is so important to further improve the work of the subdivisions of the Scientific Production Association for Agrochemical Services to Agriculture and to strengthen their material and technical base for the storage, delivery and application of

chemical preservatives to feed. It is especially necessary to develop well the system of economic relations among the members of agroindustrial associations. It is also advisable to establish a group of specialists responsible for the application of chemicalization agents at kolkhoz and sovkhoz sections in every subdivision of the Scientific Production Association for Agrochemical Services to Agriculture.

Of course, zoochemists cannot manage without constant help on the part of collectives of machine building and chemical enterprises. For a number of years managers of all ranks have demonstrated the importance of strengthening the material and technical base of the Scientific Production Association for Agrochemical Services to Agriculture. For example, we are in great need of tanks made of rustproof metal for remote warehouses and those adjoining the railroad line, as well as capacities for the transportation of preservatives to the place of their application. Special equipment is needed.

Barrels of a capacity of 200 to 250 liters are very convenient for the delivery of preservatives in small quantities. There is a need for highly productive hinged-type batchers mounted on silage harvesting combines, or stationary ones--for installation near trenches. Such mechanisms are also needed for the application of dry (loose) preservatives.

However, all this costs farms and the state a great deal. For example, in 1981 the chemical industry offered about 30,000 tons of acetic acid to agriculture. In brief, kolkhozes and sovkhozes ever more extensively apply acetic, formic and other organic acids for the preservation of green feed. However, with all the desire kolkhozes and sovkhozes have been unable to take full advantage of this, because many of them, like the associations of the Scientific Production Association for Agrochemical Services to Agriculture, do not have the necessary capacities for the transportation and storage of organic acids.

The imperfection of technology also greatly lowers the efficiency of treatment of coarse feed with anhydrous ammonia. This process is still too labor intensive and unproductive. Ammonia is mostly introduced into straw with a metal needle made from a pipe 30 to 50 mm in diameter and 3.5 meters long with a cone tip. The work with the needle is done manually. However, the Scientific Research Institute of Feed imeni Vil'yams and the Scientific Research Planning and Technological Institute of Liquid Fertilizers are in no rush to further improve their recommendations on the treatment of straw with ammonia in order to increase the productivity of labor of machine operators.

The country's chemical and microbiological industries produce 60 types of feed additives. Unfortunately, their production volumes greatly lag behind the needs of animal husbandry. For example, the need for feed phosphates is met only at the rate of 26 percent, for trace elements, 50 percent, for irreplaceable amino acids, only 15 percent and for vitamins, 10 percent.

Now there is no farm whose workers would not ask for an increase in the delivery of salt. Kolkhozes, sovkhozes and private subsidiary farms use it in animals' rations, as well as for feed preservation. In the last few years, however, only 1,460,000 to 1,500,000 tons of salt have been allocated for the

needs of public animal husbandry, while farms have requested 1,960,000. Such a lack of correspondence is due to the obsolete low norms of consumption of salt according to types of animals. In the opinion of specialists and workers in animal husbandry, the previously established annual norm of salt per cow, that is, 26 kg, is understated. It should be increased to 32 or 34 kg. The need for this correction is also confirmed by the scientists of the All-Union Scientific Research Institute of Animal Husbandry. However, old recommendations still remain in force and the USSR State Committee for Material and Technical Supply follows them in the determination of allocations. At the same time, it would be correct to also take into account the livestock on the population's private farms. It is also necessary to improve the provision of kolkhozes and sovkhozes with salt for technical purposes, because its shortage forces farm managers to use the salt intended for animals for these needs.

The irregular delivery of salt greatly disrupts its supply for animals. This is especially noticeable on farms in Siberia and the Far East. Remote enterprises deliver more than 170,000 tons of salt to these regions. Owing to the shortage of railroad cars, they do not unload it on schedule. Meanwhile, this problem could have been solved a long time ago by accelerating the rates of construction of salt mines in Siberia. SEL'SKAYA ZHIZN' and other central newspapers often wrote about this; in particular, about the sluggishness of the USSR Ministry of the Food Industry, which has been building a salt extracting enterprise in Irkutsk Oblast for more than 10 years. However, salt continues to be transported to Siberia from the Volga Area.

Livestock breeders have many complaints about the quality and assortment of common salt. First of all, this applies to the delivery of salt pellets. Work on the inclusion of trace elements in them also needs control. Owing to the lack of such pellets, kolkhozes and sovkhozes are forced to prepare mineral mixtures in a primitive way, allowing great deviations from the norm.

The problem of utilization of calcium dressing is no less acute. Even mixed feed for poultry receives less of it than needed. Poultry factories have to additionally enrich mixed feed, expending a great deal of labor and capital.

The chemical industry offers liquid caustic soda to agriculture. This is a good agent for the treatment of straw. However, scientists have not yet developed a progressive technique of its application. Nor are there machines, equipment and mechanisms for the storage, delivery and application of caustic soda.

The microbiological industry has unlimited capabilities for the enrichment of livestock and poultry rations. Enzyme preparations, amino acids, antibiotics and other microbiological synthesis products have a great potential energy. However, this potential is only at the initial stage of mastering.

Evaluating the attained level of the effect of chemicalization on the intensification of animal husbandry and its capabilities, it can be stated that this sector is greatly indebted to farm workers. Its achievements must be utilized much more extensively.

11,439  
CSO: 1824/187

## LIVESTOCK

### INDUSTRIALIZED SHEEP RAISING PROMOTED IN KAZAKHSTAN

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 11, Nov 83 pp 14-15

/Article by Kh. Yertazin, economist at KazNIIEOSKh: "Industrialization of Sheep Raising and Output Quality"/

/Text/ Among the branches of the republic's agroindustrial complex, sheep raising occupies a leading position. An increase in the volume of high quality mutton, wool and karakul pelts is dependent upon the intensive development of this branch. And this can be achieved, as noted during the May (1982) Plenum of the CPSU Central Committee and in the USSR Food Program, provided the conversion of sheep raising over to an industrial basis is carried out in a persistent and purposeful manner.

The experience of a number of farms in western Kazakhstan, where meat and fat sheep raising is especially well developed, reveals that the intensive fattening of animals has been achieved in those areas where it is carried out at fattening sites and complexes. Thus, at sovkhozes in Chelkarskiy Rayon, Aktyubinsk Oblast, such labor organization made it possible to raise its productivity by almost threefold. In 1981, the average live weight in the rayon for adult sheep prepared for sale was 47 kilograms and lambs -- 33 kilograms. More than 90 percent of the animals were in a high state of nourishment upon delivery. The sovkhozes Zhanakonysskiy, Sarybulakskiy and Toguzskiy, merely by raising the state of nourishment of the sheep turned over to the state, lowered the production cost per quintal of output to 69-76 rubles and raised its sales price to 95-104 rubles.

However, not all of the farms in this region were able to achieve such results. Moreover, some of them tolerated a reduction in the quality of the products. On the average for the 1976-1980 period, the sovkhozes in Irgizskiy Rayon supplied the state with only one half the number of sheep delivered by farms in Uilskiy Rayon. Moreover, the average live weight of one animal was lower by 5 kilograms and the proportion of animals in a high or average state of nourishment was lower by 21.2 percent. The production cost for a quintal of mutton increased by 13.21 rubles and the sales price decreased by 10 rubles.

Some leaders and specialists blame this reduction in live weight in the animals on the increase that has taken place in the proportion of lambs in the overall number of sheep being delivered. However, in 1980 and compared to 1978, the proportion of lambs in the overall number of sheep prepared for sale

decreased by 4.5 percent and the weight of an adult sheep fell by 5.7 kilograms. All of this led to a situation wherein, owing to the delivery of low condition animals alone, the farms fell short in their deliveries to the state by approximately 20,000 quintals of mutton.

Very poor use is being made of an important reserve for increasing the production of products -- the sale of the meat of lambs during the year of their birth -- this can produce considerable economic advantages. Indeed, it is a known fact that when a lamb is retained through the winter the farm incurs additional expenditures for feeding it which are not compensated by a suitable increase in live weight during its second year of life. The turning over of lambs during the year of their birth makes it possible to conserve in the use of material resources, avoid considerable losses in lambs during the winter period and supply the population with high quality meat.

For those who take advantage of this reserve for raising the productivity of sheep raising, the state has created the required conditions, having set the prices for young mutton at the same amounts established for adult sheep in a high state of nourishment.

Improvements in the quality of sheep raising products are greatly dependent upon the proper management of breeding and selection work at all of the farms. This must be a matter for constant concern by all leaders and specialists. However, it is not secret that on many farms in western Kazakhstan the conditions for the feeding, maintenance and use of pedigree animals do not conform to the established norms. Owing to this fact, valuable pedigree animals are subsequently assigned to lower category classes and culled out and the following year pedigree sires are once again purchased. Substantial funds are expended for acquiring them and still they do not produce a proper return. The time is at hand for eliminating this vicious practice in all areas.

The non-fulfillment of the requirements for breeding and selection work in sheep raising (quality appraisals, formation of flocks, evaluation of rams according to quality of offspring and so forth) and the use of low productivity rams must be viewed as instances of mismanagement. The work of breeding sovkhozes should be evaluated not only according to the number of pedigree animals sold, but mainly on the basis of quality improvements being carried out in the animals on farms located in the zone serviced by them.

A strong reserve for increasing the production and improving the quality of mutton is that of introducing the industrial crossing of local fat-tailed sheep with rams of the Saradzhinskaya strain, with subsequent breeding of the desired type of hybrids. This was the method employed for creating a group of hybrid Aktyubinsk (Saradzhino-fat-tailed) sheep. They differ from pure-bred Saradzhinskaya sheep on the basis of having better meat-fat and wool qualities. According to data supplied by the Aktyubinsk Experimental Station, the live weight of the ram-sires is 80-135 kilograms, young rams 1.5 years of age -- 60-85 and adult ewes -- 58-87 kilograms. Whereas young rams of the Saradzhinskaya strain weigh 33-37 kilograms at the age of 5 months, the Aktyubinsk (Saradzhino-fat-tailed) sheep reach almost the same weight at 3.5-4 months of age.

The region's sheep breeders are displaying considerable concern with regard to improving the quality of the wool products. The claims being addressed to them by industry are still quite valid. They are satisfying the requirements for coarse fleece by only 87.5 percent, including for light fleece -- 25 percent. The deficit in light fleece must be covered by deliveries from without and partial decoloration of the raw materials must also be carried out at the wool processing enterprises.

Aktyubinsk sheep are being used for improving the quality of the wool at all sovkhozes in Irgizskiy Rayon, at two in Karabutakskiy Rayon and on three farms in Chelkarskiy Rayon. The best herds are concentrated at the Breeding Sovkhoz imeni XX S"yezda KPSS in Karabutakskiy Rayon. Here the wool is mainly of a light-grey or white color. The clipping of the wool is sufficiently high and the yield of pure wool fluctuates on the order of 1.4-1.5 kilograms per sheep.

Moreover, it is economically profitable to breed Aktyubinsk sheep, since the state purchases their wool at higher prices -- 8-9 kilograms per kilogram, while those for fat-tailed sheep range only from 5 to 7 rubles.

In raising the quality of wool, great importance is attached to its correct classification. The experience of Australian specialists is very instructive in this regard. In essence, their work consists not of simply classifying the wool at a shearing point, as we do, but rather they prepare the raw material for washing at a factory for primary processing. This process is more complicated than the usual work performed by our wool graders. Two conditions must be observed in order to classify wool according to the Australian system. One of them -- delivering flocks for shearing that were formed a year earlier according to sex and age and which did not change during the year; and second -- dividing up the bottoms and the wool from the abdomen at the sheep shearing site. It is important for a shearer not to mix these grades of wool with the principal bulk of fleece, which is delivered to the grading table where it is finished off.

The conversion over to such a method is advantageous both for the farms and for industry. Actually, it makes it possible to retain all of the good qualities which the wool possessed prior to shearing and it eliminates the laborious process of grading it at the factory.

The introduction of this method serves as a fine prerequisite for creating a single trade-industrial classification system for wool, that will make it possible to combine the efforts of the sheep breeders and workers attached to the processing industry and strengthen the confidence of both sides.

The sheep breeders in western Kazakhstan have many reserves available for raising and improving the quality of their products. The task is one of ensuring that the experience of the leading farms, those which are boldly introducing industrial methods for managing the branch into operations, is made available to all sovkhozes and kolkhozes in the region. Their tasks are being channeled in this direction by the Food Program and the decisions handed down during the June (1983) Plenum of the CPSU Central Committee and the 10th Plenum of the Central Committee of the Communist Party of Kazakhstan.

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## LIVESTOCK

### INTENSIFICATION OF LIVESTOCK SECTOR PRODUCTIVITY IN BELORUSSIA ADVANCED

Moscow SEL'SKAYA ZHIZN' in Russian 27 Jan 84 p 2

/Article by M. Glinka, zootechnician: "Based Upon Intensive Factors"/

/Text/ The farm workers of Belorussia, similar to all livestock breeders throughout the country, are carrying out a thorough search for methods for raising labor productivity and lowering the production costs for milk, meat and other products. Thus the collective at the Bedrich Breeding Plant in Gomel Oblast undertook the obligation of lowering labor expenditures for the production of a quintal of weight increase in cattle to 30 and for a quintal of milk -- to 4.5 man-hours, against a plan calling respectively for 36 and 5 man-hours. The plans call for this to be achieved mainly through intensification of the branch and by raising the productivity of the cattle. The annual milk yield for cows on the farm is now 4,800 kilograms and the daily weight increase for replacement young stock -- 650 grams. The collective at the breeding plant has resolved to fulfill its annual plan for the sale of milk, in the amount of 3,500 tons, by 20 December and to sell 350 pedigree young bulls and heifers, or 150 more head than the figure called for in the task.

At the present time, many farms throughout the republic are undertaking high obligations. Included among them are the Rodina Kolkhoz in Ostrovetskiy Rayon, Grodno Oblast, the XVIII Parts"yezd Kolkhoz in Tolochinskiy Rayon, Vitebsk Oblast, the Zarya Kommunizma Kolkhoz in Ivavovskiy Rayon, Brest Oblast and the XVII Parts"yezd Kolkhoz in Goretskiy Rayon, Mogilev Oblast. The livestock breeders in Berezovskiy Rayon, Brest Oblast have outlined specific measures for raising labor productivity. Here the decision has been made to create technical servicing points on all of the large farms and to introduce brigade forms for organizing labor and wages based upon the final results; to raise the level of 1st class specialists among the livestock breeders to 35 percent and among the masters of machine milking -- to 50 percent; to increase the cow milk yields to 2,600 kilograms, the average delivery weight for cattle -- to 400 and that for hogs -- to 120 kilograms. Labor productivity is to be raised by more than 20 percent compared to the level for the 10th Five-Year Plan and output production costs are to be lowered an average of 5 percent. All of the rayon's farms will complete the current year on a profitable basis.

Many such examples are to be found in Belorussia. The farm workers performed well last year. Thus the sale of cattle increased by 9 percent compared to

1982 and hogs -- by 28 percent. The gross yield of milk increased by 5 percent and during the first 3 months of the wintering campaign -- by 8 percent.

Of special importance is the fact that these results were achieved by the livestock breeders on the basis of intensification -- the average milk yields increased from 2,160 to 2,247 kilograms, with the number of cows remaining practically the same as in the past. This made it possible for the republic's farms to fulfill their annual plans for selling animal husbandry products to the state and also to provide a better supply of these products for the residents of cities and villages.

However, success was not achieved in eliminating the indebtedness of past years and the republic did not achieve the level for 3 years of the five-year plan with regard to the sale of milk and meat to the state. Brest and Vitebsk oblasts were unable to complete their three year task for the sale of milk and meat, nor were Mogilev or Gomel oblasts able to fulfill their tasks for wool. Grodno Oblast remained in debt insofar as purchases of meat were concerned. Minsk Oblast -- meat and wool. Last year, many farms even lowered their production of animal husbandry products.

During a recent Plenum of the Central Committee of the Communist Party of Belorussia, the party organizations and kolkhoz and sovkhoz leaders were assigned the following task: each specific farm must achieve forward progress at the rates required for ensuring fulfillment of the tasks for the five-year plan and the Food Program. This year alone, the plans call for the production of meat at all categories of farms to be increased by 7 percent compared to the plan for last year, milk -- by 3 percent and eggs -- by 4 percent. The most correct and reliable means for achieving this goal -- the intensification of animal husbandry operations.

The republic's farms have at their disposal all that is required for carrying out this important task. The kolkhozes and sovkhozes have sufficient livestock, more than in any previous year, feed has been placed in storage, additional measures are being carried out aimed at strengthening the feed base for animal husbandry and training has been provided for farm personnel. Concern must be displayed for making the most complete use of this powerful potential, for launching a socialist competition on an extensive scale and directing the efforts of the personnel towards achieving an above-plan increase in labor productivity and additional reductions in production costs.

In Brest Oblast, the plans call for this goal to be achieved mainly through further branch specialization and concentration. Here, based upon experience, they have become convinced regarding the advantages offered by large-scale livestock enterprises which operate on an industrial basis. Thus the Mir Sovkhoz-Combine, during 3 years of the five-year plan, sold 2,355 tons of beef and 1,600 tons of milk over and above the plans. The labor productivity for workers at the combine increased by 34 percent during this period. The average daily weight increases in cattle during fattening exceed 1,200 grams and this year 1,300 grams were achieved (such was the counter plan of the collective). Taking this experience into account, the decision was made in the oblast to create similar enterprises for operating on an industrial basis. Successful work is being performed, for example, by the collective at the

Pamyat' Il'icha Kolkhoz-Combine in Brestskiy Rayon, which was created on the basis of three farms. Last year this complex for the fattening of 10,000 head of cattle supplied the country with 8 million rubles worth of beef and earned 2 million rubles worth of profit. Moreover, it is important to note that this fattening work was carried out mainly on the basis of internally produced feed.

Equally high results have been achieved in hog raising operations, with more than 40 percent of the output being produced at large complexes. In view of this fact, the decision was made in the oblast to intensify the industrialization of animal husbandry operations, so as to be able, during the next few years, to produce up to 80 percent of the marketable pork and 35 percent of the beef using an industrial technology.

The requirement for making more efficient use of available resources is found in the socialist obligations of many farms in Grodno Oblast. Thus the livestock breeders of an agroindustrial association in Grodnenskiy Rayon undertook to raise labor productivity in agricultural production by 30 percent compared to the average annual level for the 1976-1980 period and also to increase gross output by 25 percent.

With each passing day, the Editorial Board receives more such examples in the mail. And it comes as no surprise to learn that the livestock breeders in Grodno Oblast, who last year were the best among others in making use of the potential accumulated on the farms, do not intend to yield first place as they actively strive to intensify the branch.

Gomel Oblast is one of the largest in Belorussia. And the opportunities available for developing agricultural production here are great. But by no means is full use being made of these opportunities. Compared to the level for the 10th Five-Year Plan, the average annual production of meat over the past 3 years increased by only 3 percent and that for milk -- by 1 percent. This was the result of placing emphasis on extensive methods. Thus, during the 10th Five-Year Plan the number of cows increased by almost 19 percent and yet meat and milk production stabilized during the past few years, with the proportion of beef decreasing by 10 percent. The experience of leading farms has shown that opportunities exist in the oblast for raising the productivity of the livestock sharply and, on this basis, increasing the output of the farms. For example, at this same Bedrich Breeding Plant and also at the Brilevo and Nosovichi sovkhozes, more than 4,000 kilograms of milk are being obtained annually per cow and at the Demekhi and Strelichevo sovkhozes the average daily weight increases in the cattle exceed 900 grams.

This year the oblast's livestock breeders plan to increase their milk sales to the state by 11 percent and meat -- by 15 percent. In the absence of branch intensification and increases in farm and labor productivity, this task cannot be solved.

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## LIVESTOCK

### DEVELOPMENT OF BEEF CATTLE BREEDING IN KAZAKHSTAN DISCUSSED

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 12, Dec 83 pp 28-29

Article by A. Abrosimov, department head in the Main Administration for Animal Husbandry of the USSR Ministry of Agriculture: "Beef Cattle Husbandry -- A Leading Branch"

Text Kazakhstan occupies a leading position in the country in the development of specialized beef cattle husbandry. During the 1928-1932 period, 802 bulls of the Hereford strain were imported into the republic and distributed among sovkhozes in Kustanay, Tselinograd, Karaganda, Semipalatinsk, Uralsk and Aktyubinsk oblasts. These bulls, when crossed with local cattle, provided the foundation for the high quality transformation of beef cattle. Subsequently, the size of this herd increased noticeably. Thus the development of a new branch of agricultural production was defined -- specialized beef cattle husbandry.

In a report delivered before the 7th Plenum of the Central Committee of the Communist Party of Kazakhstan, member of the Politburo of the Central Committee of the CPSU and 1st Secretary of the Central Committee of the Communist Party of Kazakhstan Comrade D.A. Kunayev pointed out: "In order to increase the production of meat, cattle husbandry and especially beef cattle husbandry must be developed at an accelerated tempo and better use must be made of the potential afforded by a remarkable domestic strain -- the Kazakh Belogolovaya -- and also such strains as Galloway, Santa Gertrudis and Aberdeen-Angus. In addition, the rich experience of our leading farms in the intensive fattening of cattle and in industrial crossings must be introduced into operations on a more extensive scale and the state should not be supplied with light weight or undernourished animals."

At the present time, almost one half of the country's beef strains of cattle is located in the republic. The greatest numbers of such cattle are found on farms in Uralsk, Kustanay, Semipalatinsk and Tselinograd oblasts.

During the 10th Five-Year Plan the number of cattle increased by 233,700 head, including beef cows by 69,700 head.

Fine indicators in increasing the number of beef cattle during the 10th Five-Year Plan were achieved in Turgay Oblast -- 50,300 head, Uralsk Oblast -- 40,500, Semipalatinsk and Tselinograd oblasts -- each 32,000, Pavlodar, North

Kazakhstan and Kustanay oblast -- each 26,000 head. The intensification of animal husbandry operations, the mechanization and automation of production processes on the farms and the use of a new technology for producing goods require a radical change in the existing methods for managing this branch and the creation of a new type of animal that is adaptable to industrial production conditions and provides a fine return for feed labor and resource expenditures.

Science and practical experience in our country and republic underscore the fact that the organization of intensive beef cattle husbandry operations must be based upon the use of highly productive beef strains of cattle, their crossbreeds and hybrids and upon the extensive introduction of modern achievements in the sphere of genetics and breeding.

Our principal beef strains of cattle are domestic types -- Kazakhskaya Belogolovaya and Kalmytskaya, and also some imported from abroad -- Hereford, Santa Gertrudis, Galloway, Aberdeen-Angus and Charolaise. The Kazakhskaya Belogolovaya strain has become extremely popular not only within the republic but also beyond its borders, particularly in the steppe zone of the country. The animals of this strain are distinguished by early maturity, high growth energy, superior carcass qualities, heavy hides, endurance and an ability to adapt both to the summer season and winter maintenance, a quality that is of special importance in view of the conditions found in Kazakhstan with its diverse soil-climatic and feed conditions.

The imported strains of beef cattle -- Galloway and Santa Gertrudis -- are exerting a positive influence on the pedigree and productive qualities of the cattle in the zone in which they are bred. Pedigree and industrial herds of the Galloway strain have been created in Alma-Ata and East Kazakhstan oblasts. As a result of crossings carried out with local cattle, the hybrids delivered for slaughtering were 70 kilograms heavier in live weight than were local animals. Hybrid bulls of the Santa Gertrudis strain displayed a high growth energy at an industrial complex of the 40 Let Oktyabrya Kolkhoz in Panfilovskiy Rayon, Taldy-Kurgan Oblast. Here their weight reached 471 kilograms at the age of 18 months.

The distribution of the beef cattle by natural zones was predetermined by the type and nature of feed production. The plan for strain regionalization called for the breeding of specialized beef strains in 18 oblasts and 163 administrative regions, including the Kazakhskaya Belogolovaya in 133 rayons, Santa Gertrudis -- in 9, Galloway -- in 4, Aberdeen-Angus -- in 5, Hereford -- in 3 and the Kalmytskaya strain -- in 14 rayons. The breeding and carrying out of improvements in the strain and productive qualities of beef strains of cattle are being carried out by six breeding plants, 17 breeding sovkhozes and 63 breeding farms.

In the development of beef cattle husbandry, consideration must necessarily be given to maintaining a close link between it and dairy cattle husbandry. The entire history of development of animal husbandry testifies to the fact that beef cattle husbandry develops only upon the condition that dairy cattle husbandry is managed in a successful manner, since it is inseparable associated with ensuring that the population is supplied with milk and its derivatives as chief nutritional products. An increase in the republic's meat

products is largely determined by the rates of growth for beef production. It occupies 49 percent in the overall meat structure.

Beef production in the republic at the present time is being carried out using mainly cattle of dairy and mixed strains. This situation will evidently continue to exist for a considerable period of time, since specialized beef cattle occupy only 32 percent of the strain structure and its expanded reproduction requires safeguarding of the brood stock. In addition, a sharp increase in them by means of internal reproduction is practically impossible in the absence of an additional source for the mating contingent. Thus exceptional importance is being attached during this modern stage to the extensive introduction into production of a method for the industrial crossing of low productivity dairy cows and replacement heifers with bulls of beef strains.

Heifers considered typical of the paternal strain, obtained from industrial crossings, should be utilized in an efficient manner for the staffing of brood stock for beef sovkhozes and farms, in the interest of accelerating the creation of new groups of beef cattle. Use can be made of 15-20 percent of the dairy cows and heifers for industrial crossing purposes without causing any harm to the development of dairy cattle husbandry.

An important source for raising the productivity of the animals is that of inter-strain crossings. According to data supplied by SevNIIZh /Northern Scientific Research Institute of Animal Husbandry/, at the Vostochnyy Sovkhoz in Kokchetav Oblast hybrids obtained from the crossing of Kazakhskaya Belogolovaya strain cows with bulls of the Charolaise strain reached a live weight of 495 kilograms at 18-19 months of age, with Kians -- 455 and with Herefords -- 435, compared to young stock of the Kazakhsakay Belogovaya strain -- 395 kilograms. In addition, a reduction in the production cost per quintal of weight increase of 19 percent takes place when a crossing is carried out with the Charolaise strain, with Kians -- 13 and with Herefords -- 5 percent.

The solving of the task concerned with accelerating the intensification of beef production requires constant improvements in reproduction of the herd and more efficient utilization of the brood stock and the young stock obtained and intended to be used for meat purposes, the biological potential of the brood stock and highly valuable sires. The development of beef cattle husbandry in the republic is taking place based upon the organizational-economic principles of inter-farm cooperation and mainly within the borders of administrative regions. For 6 years now, 160 specialized farm associations for the maturing, fattening and procuring of cattle, involving the participation of 1,469 farms, have been functioning within the republic.

During the 9th Plenum of the Central Committee of the Communist Party of Kazakhstan, the task was assigned of having each farm raise the delivery weight for the animals to no less than 400-450 kilograms and to increase their number of cattle by a minimum of 400-500 head. Over the past 5 years, for example, 188 farms in Kustanay Oblast achieved this goal and expanded their farms by 660 head each. One farm in Alma-Ata Oblast increased its cattle herd by 456 head. Tselinograd and North Kazakhstan oblasts increased the number of cattle on each farm by 432 and 414 head respectively.

In two oblasts -- Uralsk and Kokchetav -- the increase per farm amounted to 393 and 390 head respectively. The farms in Chimkent Oblast increased the numbers of their cattle to an extent lower than their potential; here the increase amounted to only 59 head per farm. For the republic as a whole, the increase per farm amounted to an average of 325 head of cattle. The most well nourished and heaviest cattle supplied for slaughtering purposes came from farms in Kustanay Oblast. Over the past year, they fattened and delivered 214,600 head of cattle, of which number 85 percent were in a high state of nourishment. The average weight per animal was 445 kilograms. Many farms in this and other oblasts are supplying the state with cattle weighing 500-520 kilograms.

Thus the livestock breeders in Semiozernyy, Fedorovskiy and Ordzhonikidzevskiy rayons in Kustanay Oblast are selling cattle for slaughtering purposes that weigh in excess of 500 kilograms. The Sovkhoz imeni XXIII S"yezda KPSS in Fedorovskiy Rayon has achieved high indicators in the production of beef. More than 10,000 cattle are being maintained at this sovkhoz, with 2,800 of this number being cows. Last year 91 calves were obtained from every 100 cows. Roughly 1,647 head of cattle were turned over to the state at an average weight of 578 kilograms, with 98.6 percent of the animals being in a high state of nourishment upon acceptance. The sovkhoz's profit -- 1,632,400 rubles, including from cattle husbandry -- 965,000 rubles. A team headed by Aleksandr Pavlovich Belyanin fattened and delivered to the state 655 head, the average weight of which was 672 kilograms. For having supplied high quality meat products, bonuses in the amount of 60 million rubles were issued to Kustanay Oblast.

High results were achieved as a result of organizing cattle fattening operations at mechanized sites, improving feed production and feed preparation and introducing progressive forms for organization and wages. The future for public animal husbandry -- its conversion over to progressive technologies in all areas. Hundreds of livestock farms have been reorganized during the past few years. All of this made it possible to raise labor productivity and to increase output production.

Of overall meat production, 24 percent of the pork and beef is being produced at livestock production complexes. It bears mentioning that the weight increases for young cattle stock at beef production complexes are twice as high as those at sovkhozes, with the average live weight per head sold to the state being 406 kilograms, or 5 kilograms more than the average for the republic; feed expenditures per unit of output were one half as much.

High results are annually being obtained at a specialized complex for the production of beef at the Sovkhoz imeni Gazeta Pravda in Uralsk Oblast. Here more than 800 grams of weight increase are being obtained during fattening and 4,500 head of young cattle stock are being delivered to the state at an average weight of 522 kilograms. During the years of the 10th Five-Year Plan, a profit of 5.6 million rubles was realized from beef produced at the complex.

Efficient work is the rule at the Dzhetygenskiy complex for beef production in Alma-Ata Oblast. Each year, 10,000 head of young cattle stock are being raised and turned over to the state here. The average daily weight increase

is 947 grams, considerably less labor and feed are expended for the production of a quintal of weight increase and the period for the raising and fattening of animals is only one half as long as the average for sovkhozes throughout the republic. The complex as a rule annually over-fulfills its production program. In 1982, 3,800 tons of weight increase were obtained here, or 105 percent of the plan. The meat processing industry was supplied with 10,700 head of young cattle stock, the average weight of which was 427 kilograms. Ninety seven percent of the animals were in a high state of nourishment. Roughly 1.7 million rubles worth of profit was realized from the sale of beef.

Unfortunately, experience indicates that by no means are all of the livestock complexes producing the desired returns. Some of them are not staffed with highly productive animals and lack a stable feed base. The task has been assigned of raising the large livestock complexes to their full planned capabilities in the near future. Comparatively small farms at sovkhozes and kolkhozes should be reorganized so as to permit the use of intensive methods of meat production. This will make it possible to raise the rates of growth for livestock output, it will increase the effectiveness of capital investments and it will accelerate the return from such investments.

In Kazakhstan, which has tremendous areas of natural feed land at its disposal, an important reserve for increasing meat production, improving its quality and lowering its production costs is that of cattle grazing. The high nutritional value of pasture grass, supplying the animals with mineral additives and regular watering places are making it possible for the animals to gain weight and an improved state of nourishment.

The republic's fodder fields occupy 28 percent of the sowing areas. The plans call for hay and haylage production to be raised to 19 million tons by 1985 and succulent feed -- to 26 million tons. In addition, the quality of the feed must be improved through the introduction of progressive technologies for procuring, storing and processing it.

The Food Program for the period up to 1990 has established great tasks with regard to the production of meat. The average annual production of meat during the 11th Five-Year Plan (in dressed weight) must be raised to 1.2-1.3 million tons and during the 12th Five-Year Plan -- to 1.4 million tons.

An important source for obtaining high quality beef during the next few years will be that of beef cattle husbandry. The republic's Ministry of Agriculture has developed measures for intensifying and increasing the production of beef. With the implementation of these measures, the number of beef cattle during the 12th Five-Year Plan will increase by 23 percent above the figure for the 10th Five-Year Plan and beef production will increase by 19 percent and reach 469,000 tons in dressed weight and for all categories of farms -- to 619,000 tons.

Thus a specific program has been defined in the republic for further developing cattle husbandry and increasing the production of beef and the livestock breeders at sovkhozes and kolkhozes are striving to implement it. The RAPO /rayon agroindustrial association/ and farm leaders and specialists

must intensify their work aimed at developing the branch in all regions possessing the required pasture lands and potential for the creation of intensive feed production operations on reclaimed lands. They must ensure improvements in the reproduction of the herd of beef cattle, the raising, fattening and grazing of the animals, strengthening of the logistical base, a reduction in labor and resource expenditures and improvements in the efficiency of this branch.

The technology for the management of beef cattle husbandry must be observed in a very strict manner, the milking of beef cows should not be tolerated, calves should not be weaned away from their mothers before they are 6 months of age, timely measures must be undertaken to sanitize the farms against infectious diseases and more extensive use should be made of progressive forms for labor organization, based upon the use of collective contracts and with wages based upon the final results.

Each year the republic's farms supply the state with 1.5-1.6 million head of cattle. It bears mentioning that the acceptance of cattle directly on the farms by enterprises of the processing industry is not being expanded and constitutes only 5.5 percent of the overall turnover of cattle. At the present time it is limited to centralized shipments and the acceptance of the cattle is not being carried out with a copy of the acceptance receipt according to weight and nutritional value. Moreover, the accounting for this cattle is being conducted at the meat combines based upon the slaughtering results. In the process, the meat combines are not bearing any responsibility for safeguarding the cattle, for weight losses during transport or for their pre-slaughtering maintenance or processing.

In connection with further improving direct contacts between the farms and processing enterprises, reducing losses and improving the quality of the meat, a solution must be found for the problem of accepting the cattle directly on the farms according to their live weight, with a copy of the acceptance receipt and centralized shipping of the cattle by specialized transport of the meat industry. Where necessary, use should be made of the specialized transport equipment of sovkhozes and kolkhozes. Thus there no longer will be any need for diverting numerous farm representatives in connection with the delivery and processing of the cattle, the delivery of sub-standard animals for processing will be eliminated and improvements will take place in the use of specialized transport. And the efforts of all elements of the republic's agroindustrial complex must be directed towards completing, during the 12th Five-Year Plan, the conversion over to accepting the cattle at the sovkhozes and kolkhozes and to shipping them by means of transport equipment furnished by the procurement parties, as required in the USSR Food Program.

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## REGIONAL DEVELOPMENT

### APPLICATION OF SCIENCE, TECHNOLOGY IN UKRAINIAN AGRICULTURE ADVANCED

Moscow PRAVDA in Russian 3 Dec 83 p 2

/Article by G. Pal'shin, head of a sector in the Department of Science and Educational Institutes of the Central Committee of the Communist Party of the Ukraine: "Agricultural Department of Science"/

/Text/ Shortly after the May (1982) Plenum of the CPSU Central Committee, during a joint session of the party committee of the Institute of Material Management Problems of the Academy of Sciences for the UkrSSR and VNIIzhivmash, a discussion was held on how best to organize a socialist competition for collectives aimed at raising the technical level for machines and equipment used in animal husbandry. At first glance, it might appear that the Institute of Material Management is not directly concerned with agricultural matters. However the business-like discussion revealed that the scientists can undertake 24 themes that are directly associated with implementing the USSR Food Program. They recommended new composition materials for agricultural machine building and they developed technologies for the plasma coating of tractor engine bushings, for restoring crankshafts and for strengthening the working elements of crushers and feed mincers and other innovations.

A business-like attitude and purposefulness in handling the requirements of the rural areas are characteristics of a majority of the academic institutes in the Ukraine. They are working on approximately 200 themes associated with implementing the tasks of the Food Program.

During the June (1983) Plenum of the CPSU Central Committee, this problem was cited as being an example of comprehensive planning for the principal problems of the economy. Naturally, the approach employed for solving the established tasks must be comprehensive in nature and involve the participation of specialists representing the various branches of science.

In the foreground of this work -- the biological institutes. Theoretical studies in the area of plant genetics and the use of chemical and radiation methods for influencing plant heredity have led to the creation of highly productive varieties of winter wheat which are suitable for intensive farming conditions, varieties such as Kiyanka, Podol'skaya-501, Lastochka and Zolotaya Niva. The Yubileynyy-60 corn hybrid has been developed; it produces 70-105 quintals of grain per hectare. This year, new varieties and hybrids of wheat and corn were grown on more than 150,000 hectares. The economic effect realized from their use exceeds 2 million rubles.

Experience testifies to the following: success is achieved in those areas where business-like interaction is manifested between the scientists and agricultural workers and where the party committees and primary party organizations furnish support and exercise effective control. Thus the Institute of Plant Physiology of the Academy of Sciences of the UkrSSR recommended the use of a new technology which makes it possible, almost with no additional expenditures, to obtain stable forage crop yields -- no less than 100 quintals of feed units from each hectare -- from drained peat bogs in the forest zone of the Ukraine. From the very beginning, the Volyn Oblast Committee and the Kovel Municipal Committee of the Communist Party of the Ukraine and also the party organization of the institute devoted attention to this problem.

A number of new forms for integrating science and production have proved their worth. In 1977, acting upon the initiative displayed by the Nikolayev Oblast Committee of the Communist Party of the Ukraine and the Presidium of the UkrSSR Academy of Sciences, an agreement was concluded for the very first time calling for collaboration between the oblast's enterprises and the academy. Today such agreements have been concluded by the UkrSSR Academy of Sciences with all of the republic's oblasts. What have been the results?

First of all, an acceleration has taken place in the development and growth in the scales for implementing the recommendations of scientists. Over the past 5 years, in agricultural production alone and also at enterprises of the food industry, the fruits of approximately 120 works carried out at the UkrSSR Academy of Sciences have been placed in operation. Among them, special interest is being displayed in improved methods for processing the waste products of agricultural output. For example, materials which formerly were discarded and left to contaminate the fields -- sunflower stalks, grapevine cuttings and the chaff of bast fiber crops -- are presently being used as raw materials for obtaining nutrient yeasts.

The councils for providing assistance in furthering scientific-technical progress, created in all of the republic's oblast party committees and in a majority of the municipal and rayon party committees are devoting an increasing amount of attention to the extensive participation of scientists in carrying out the tasks of the Food Program. The program-special purpose method for planning and administration is being used in an effective manner. Based upon fundamental studies in the sphere of low temperatures, Kharkov physicists have created a technology and equipment for the storage and transporting of meat, vegetables, fruit and berries. The storage of vegetables, fruit and berries in a controlled gas environment, recommended by the Institute of Gas of the UkrSSR Academy of Sciences has been tested successfully and placed in operation at a number of bases.

Deserving of special mention is the special role being played by the scientific centers of the republic's academy. These centers are combining the efforts of the academy's institutes, the branch institutes and VUZ's and they have become reliable assistants to the party committees in the campaign to further scientific-technical progress. Thus the Northwestern Scientific Center of the UkrSSR Academy of Sciences for Vinnitsa, Zhitomir, Khmelnitskiy, Cherkassy and Chernigov Oblasts has developed inter-oblast scientific-technical programs

which call for a raised efficiency for agricultural production ("Plodorodiye") and the efficient use of natural and labor resources ("Prirodopol'zovaniye").

Jointly with the production workers, the scientists of the UkrSSR Academy of Sciences recommended the use of other innovations for the rural areas. They created ammonium carbonate preparations which make it possible to store damp grain for extended periods of time, they synthesized promising chemical agents for use in combating agricultural weeds and pests and they developed and introduced at a number of enterprises of USSR Minudobreniy /Ministry of Mineral Fertilizer Production/ an energy conserving technology for the production of mono-granulated fertilizers.

The scientists attached to the academy's institutes have achieved considerable successes in solving the tasks of the agroindustrial complex. Nevertheless, their contribution can and must be even greater.

At a conference which convened in April of this year in the CPSU Central Committee, for the purpose of discussing the problems concerned with agricultural development and implementation of the Food Program, mention was made of the need for accelerating the introduction of scientifically sound farming systems and for organizing this work by zones.

The scientists are confronted with the task of devoting increased attention to the soil science. For a number of reasons, a sharp reduction in the humus content of soil has been observed in a number of regions. And indeed it is humus created over a period of centuries that forms the soil structure and serves to retain the nutrients and moisture in it. The specialists cite the negative balance of organic substances as one of the principal factors responsible for this loss in humus. Although the amount of organic fertilizer being applied to the soil is increasing, even larger quantities are being carried off by means of erosion, the regimes for applying fertilizers and for irrigation are not being observed and not enough lime is being applied to the acid soils. Comprehensive problems should be carried out on this problem and methods outlined for solving it.

There are many other vital tasks where the efforts of the branch science alone are inadequate. An acute need is being felt for developing a system of measures which will make it possible to reduce the effect of unfavorable weather conditions. Definite steps are being taken in this direction. However, many scientists are of the opinion that the problem as a whole cannot be solved unless a service is created within the framework of the agroindustrial complex which will enable the farms to determine the condition of the plants and soil, utilize the available fertilizers, herbicides, equipment and water supplies in an efficient manner and optimize the sowing and harvest periods, while using automatic control systems, mobile laboratories and the data of aerial and space studies and the hydrometeorological service.

This is an extremely complicated task. Indeed it is not enough to obtain extensive operational information on the condition of sowings and soils. A need also exists for being able to use this information in a skilful manner so as to be able to regulate the plant growth and ripening processes in a correct and timely manner throughout the entire growing season. Unfortunately, there still is not complete clarity with regard to the so-called plant models, that is, recommendations which are scientifically sound and checked in actual

practice for applying top dressings and for watering, depending upon the condition of the soils and sowings, the time of year and the weather conditions. The models developed by biologists for a number of crops and individual varieties are extremely approximate. Accurate mathematical models are required for the programming of yields and here it is impossible to proceed in the absence of cybernetics. There is a definite stockpile of unfinished work associated with these matters at the Institute of Cybernetics of the UkrSSR Academy of Sciences and yet no joint operations involving biologists of the Academy of Sciences and specialists attached to institutes of the Southern Branch of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V.I. Lenin] have as yet been started.

Many poor results are also being experienced owing to the fact that quite often proper attention is not given to recommendations made with regard to the use of fertilizers. At times, they are being applied on the farms in raised dosages and without proper justification. The rule which holds that "butter will not spoil the porridge" not only does not apply here, but in fact it often can cause considerable harm. A scientifically sound agrochemical regime is a guarantee for high cropping power.

The problems concerned with collaboration between the academic and branch institutes have not as yet been completely solved. Definite importance is being attached here to creating inter-departmental committees of the UkrSSR Academy of Sciences for working jointly with the Southern Branch of VASKhNIL and the UkrSSR Minsel'khoz [Ministry of Agriculture]. However, direct contacts between the scientific collectives are not always organized in the proper manner and at times their operations are marked by a lack of coordination. Arguments over priorities often arise between the scientific collectives of the various departments. Prolonged discussions over who was the first to say "but," during the creation of an industrial technology for cultivating a particular crop, a method for processing sub-standard products and so forth, tend to delay the mastering of the results of studies.

The scientists attached to academic institutes can be reproached for the absence of a system for selecting timely subjects for study in response to the requirements of agricultural production. There are still many problems which still are not receiving proper attention from science. Beyond any doubt, more frequent use should be made of direct orders for the carrying out of studies associated with implementation of the Food Program. This is particularly important in view of the fact that the problems in agriculture are mutually associated with one another. Thus some are concerned with combating harmful insects, while others are associated with a low cropping power for perennial grasses that are pollinated by insects. An overall approach is required for such problems as the carrying out of crop rotation plans, use of chemicals, obtaining seed, underflooding, salinization of soils and so forth.

The timely utilization of scientific-technical achievements is often hindered by weak interest on the part of a number of production workers. This even occurs at those times when the value of an innovation is quite obvious. Here is a typical situation. An efficient energy-conserving technology for producing a whole milk substitute, used in the feeding of young stock, was

developed at the academy. Its use in Dnepropetrovsk Oblast revealed the following: energy consumption decreased by a factor of 25, labor expenditures decreased twofold and production costs decreased by 20 percent. There could be no denying that the advantages were readily obvious. An experimental-industrial check was carried out on the technology and it was assigned a high grade by specialists attached to the USSR Minmyasomolprom /Ministry of the Meat and Dairy Industry/. However, the mastering of this technology on an extensive scale is being dragged out: the base for introducing it into operations is not sufficiently powerful and the serial production of equipment for the purpose of re-equipping the departments is being delayed.

It is believed that the time is at hand for creating an efficient inter-branch system for the testing of new biotechnologies, varieties of cultivated plants and models of agricultural equipment, throughout the entire chain -- from the birth of an idea to the circulation of innovations on an extensive scale and with strong interrelationships being established between science and agricultural production. These and other measures will undoubtedly be of assistance in shortening the path leading to the introduction of scientific achievements into operational practice.

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## AGRO-ECONOMICS AND ORGANIZATION

### PROGRESS, PROSPECTIVE DEVELOPMENT OF ESTONIAN APK SYSTEM

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/Article by E. Khayal, candidate of economic sciences: "On Improvement in the Economic Mechanism of the APK"/

/Excerpt/ An increase in the effectiveness of capital investments and a better utilization of the resource potential now acquire decisive importance in the republic's agriculture and the APK /agroindustrial complex/. As stressed at the May (1982) Plenum of the CPSU Central Committee, the tendency toward a decrease in the output-capital and an increase in the production costs of agricultural products due to a number of factors (primarily the rise in the cost of means of production supplied to agriculture by industry, shortcomings in the agricultural production itself and in the service spheres directly connected with it, existence of weak links in agriculture and the APK as a whole and imperfection of the economic relations between certain components of the APK and the economic mechanism) requires the adoption of urgent measures.

The June (1983) Plenum of the CPSU Central Committee pointed out that the formation of a new types of economic thinking aimed at initiative and socialist enterprise, at an increase in responsibility and at a creative search for ways leading to the best national economic end result with the smallest expenditures was the most important task.

The practice of management demonstrates ever more convincingly that the working out and realization of economic decisions in economic-production activities requires a thought-out and skillful application of economic levers and incentives. Of course, a directive approach to management simplifies the work of the planning apparatus and accelerates the coordination of planning decisions between it and production collectives. At the same time, however, the lack of correspondence of planned assignments to real production possibilities is negative, which undermines the authority of planning, disrupts its scientific basis and hampers the fulfillment of assignments for all indicators. Therefore, measures to strengthen the economic principles of planning and to involve collectives of enterprises, organizations and agroindustrial associations in economic-planning activities have been taken recently. In the formation and realization of planning decisions and specific assignments economic levers, interests and incentives are ever more actively utilized and the economic independence of production formations is strengthened.

In order that the activity of the APK may be maximally efficient, it is necessary to develop and apply a mechanism of economic regulation in which economic activities in all links are evaluated and material and moral incentives are provided according to the end result and a normal economic development of enterprises under different natural and climatic conditions is ensured. There is also a need for a certain centralization and redistribution of so-called rent income and for direct financial assistance to farms lagging for objective reasons as envisaged by the decisions of the May (1982) Plenum of the CPSU Central Committee.

For the purpose of overcoming departmental barriers among the links of the APK a new form of management of agriculture and of the sectors servicing it--the council of the rayon agroindustrial association--was introduced in all the rayons of the Estonian SSR in 1981. This form meets to the greatest degree the goals of agroindustrial integration and ensures the concentration of all organizational-managerial functions within the framework of the RAPO. At the same time, favorable conditions for the improvement and development of the economic mechanism in the APK system are formed.

The APK of the Estonian SSR, which includes the RAPO /rayon agroindustrial association/, as well as specialized ministries, associations and services of republic significance (ministries of agriculture, procurement, meat and dairy industry, food industry, State Committee for Supply of Production Equipment for Agriculture, construction organizations and so forth), was formulated on 1 April 1983. The proportions, rates of development and distribution of production, its efficiency, the price policy, the most important needs and directions in the development of scientific and technical progress and relations with the state budget and the credit system are determined centrally in a planned manner.

Owing to economic methods of management and stimulation the economic mechanism orients cost accounting subdivisions not only toward the attainment of a one-time economic result, but also toward a stable and rapid development of all the links of the APK. An operational effect on unsatisfactorily operating enterprises and sectors is ensured.

The economic mechanism at all the levels of the APK should include the following: 1) fulfillment of specific organizational-economic functions, preparation of a program and coordination of an integral-proportional development of all the spheres of the APK and a purposeful and systematic improvement in its internal structure through the establishment of integrated specialized services of different directions; 2) concentration of all resources (fund for material and technical supply and wages, limit of contract construction, credits and various subsidies according to the state plan for economic and social development), which previously were planned and allocated to individual spheres of the APK, and responsibility for the production of end products, utilization of various funds and resources, planning, financing and a rational utilization of state budgetary allocations; 3) procedure of conclusion of contracts and responsibility for the observance of contractual obligations; 4) standards and the procedure of formation and expenditure of economic incentive funds; 5) standards of material and labor expenditures depending on the structure of

production, level of technological development, livestock productivity and farming standard; 6) accounting prices of products, which are the objects of internal exchange within the framework of the APK; 7) improvement in accounting and reporting with the use of mechanization equipment.

Furthermore, the economic mechanism should envisage a gradual transition from the multichannel system of state expenditures on the production, procurement and processing of agricultural products to a single state wholesale price of the end product. The stimulation by means of the price system of an overall utilization of agricultural raw materials in industrial processing will make it possible not only to lower the production costs of foodstuffs, but also to greatly increase the resources of consumer goods.

Improvement in the economic mechanism in these directions will contribute to a more extensive introduction of the achievements of scientific and technical progress into agricultural production and the sectors servicing it and to an active and thought-out implementation of the Food Program on the basis of interfarm and interdepartmental cooperation and agroindustrial integration.

The efficiency of the economic mechanism is ensured by various measures and at different levels. The state plan for the sector's development, whose fulfillment, in turn, is attained by an increase in the responsibility of executors, its balance and a prompt preparation for a broad discussion of the drafting stage, is the basic measure. The May (1982) Plenum of the CPSU Central Committee stressed the need for improvement in planning principles in order to create more favorable conditions for expanded reproduction, to intensify the substantiation of plans and to eliminate the subjective approach to their preparation, which is still encountered in the localities.

At the same time, the financing and crediting system is to ensure an accelerated sectorial concentration and specialization in agriculture and an improvement in the utilization of material and financial resources on sovkhozes and kolkhozes. The basic share of financial resources allocated for the development of agriculture is received from internal sources. For example, during the 9th Five-Year Plan overall investments in the development of agriculture in the Estonian SSR totaled 1,121 million rubles, during the 10th Five-Year Plan, 1,278 million rubles and during the 11th Five-Year Plan will exceed 1.3 billion rubles. During the 9th Five-Year Plan 67 percent of these investments were covered by the internal sources of kolkhozes and sovkhozes and during the 10th Five-Year Plan, 75.6 percent. Their share will be increased in the future.

In accordance with the decisions of the May (1982) Plenum of the CPSU Central Committee the purchase prices of milk, meat, potatoes, vegetables and other types of products were raised on 1 January 1983. The income from the rise in purchase prices in our republic's agriculture total about 100 million rubles this year. For the purpose of the further strengthening of the economy of sovkhozes and the establishment of more favorable conditions for the introduction of cost accounting the May (1982) Plenum of the CPSU Central Committee considered it advisable to regulate the collection of a tax from sovkhozes for the budget. At the same time, it was considered necessary to liquidate the debts of kolkhozes on State Bank loans. In the Estonian SSR debts of kolkhozes amounting to 4 million rubles were liquidated and payments amounting to

6 million rubles were postponed. Thus, the internal sources of financial resources of the republic's agricultural enterprises increase significantly and, basically, make it possible to finance expanded reproduction from them.

As financial and material resources for the development of agriculture grow and the economic situation of agricultural enterprises is strengthened, the increase in the efficiency of the economic mechanism in production stimulation acquires ever greater importance. It is a question of the financial-credit mechanism regulating the relations of farms with the state by means of purchase prices, budget financing, crediting, taxation, distribution of profit and net income on sovkhozes and kolkhozes and state insurance on their property. In their totality these levers are to ensure a strong financial-economic situation of farms and an increase in their contribution to public funds for social and economic development. At the same time, despite the increase in financial and material resources for the development of agriculture, often the economic mechanism does not affect reproduction processes with sufficient efficiency.

The point is that at present it stimulates agricultural production through the individual, isolated cost accounting of kolkhozes and sovkhozes. Purchase prices oriented toward average zonal production conditions ensure normal cost accounting incentives, for example, under the conditions of our republic, only for one-third of the farms. More than one-half of the kolkhozes and sovkhozes under objectively worse conditions, owing to the shortage of internal financial resources, utilize their production potential weakly.

The development of the sector as a whole also slows down, because a significant part of the financial resources of highly profitable farms do not find application owing to the imperfect procedure of their intrasectorial redistribution. The system of economic-financial levers formed within the framework of the isolated kolkhoz-sovkhoz economy also hampers the specialization and concentration of production and the sector's social-economic and organizational development and lowers the efficiency of economic-financial measures. The economic and mathematical analysis has established that additional investments give the greatest effect on economically strong or weak farms. However, in case of excessive dissipation they are not very effective even on the strongest farms. This conclusion is of great importance for the improvement in the economic stimulation of agricultural production and equalization of the conditions of expanded reproduction on kolkhozes and sovkhozes, to which the elements and levers of the economic mechanism should contribute.

As a rule, budget financing is now used in the construction of complexes for milk production, hothouse and hotbed combines, reclamation structures and projects for cultural and general purposes. On economically weak farms, which do not have their own funds, capital investments are also financed from the budget. Thus, budget financing is to strengthen the kolkhoz-sovkhoz economy, to increase the production of agricultural products and to accelerate the transfer of agricultural production to an industrial basis.

However, the existing procedure of capital investment financing is not devoid of shortcomings weakening the stimulating effect of financial-credit levers on an increase in the effectiveness of investments. According to this procedure projects are divided into those financed and not financed from the budget

irrespective of whether agricultural enterprises have their own funds for these purposes and what their amounts are. As a result, outright budget funds for capital investments often are allocated to farms having their own funds and credits, to low-profitability or unprofitable ones. A transition from object to standard methods of capital investment planning envisaging the maintenance of a certain level of capital equipment by means of the budget and beyond this level, from internal funds and bank credits seems advisable. The standard indicator should be introduced into the long-term plans for the development of agricultural enterprises and the objects of capital investments should be distributed among them according to this indicator, as well as with due regard for the specialization of farms. It is advisable to invest funds at accelerated rates in economically lagging farms, where there are more potentials for an increase in production efficiency.

The presently existing procedure of extending credit to kolkhozes, sovkhozes and other agricultural enterprises is based on the decisions of the March (1965) Plenum of the CPSU Central Committee and subsequent decrees of the CPSU Central Committee and the USSR Council of Ministers. Credits are granted for the performance of sowing and harvesting operations, for the acquisition of seeds, feed, fuels and lubricants, mineral fertilizers and chemicals, for the purchase and keeping of livestock, for wages and for other production expenditures within the limits of the seasonal shortage of internal funds.

In recent years expenditures on crediting have been growing, outstripping output. This is the consequence of unfavorable weather conditions, the noncorrespondence of purchase prices to production expenses, shortcomings in the work of the farms themselves, the inefficient utilization of land outstripping the increase in wages as compared with labor productivity and big losses and mismanagement, which are the causes of the unprofitable activity and loss of internal circulating capital. In this case the State Bank grants temporary credits for specific purposes even if there are overdue debts. However, such credits create parasitic frames of mind among many farm managers, weaken financial and payment discipline and lead to overcrediting. Some farms carry out expanded reproduction fully at the expense of credit.

For the purpose of improving bank crediting for kolkhozes, sovkhozes and other agricultural enterprises and organizations, a procedure in which current production expenditures would be credited only with the participation of internal funds should be established. For this kolkhozes should have a standard of internal circulating capital similar to sovkhozes and with deductions from gross income should replenish fixed and circulating capital as a part of indivisible funds, economic incentive funds and reserve and other funds.

The standard of internal circulating capital on kolkhozes should comprise no less than 50 percent of the value of the planned expenditures on incomplete production (harvest and output of the next year) carried over to the following year, of the remainder of the young stock and animals being fattened, of commodity stocks and of other circulating capital. This would contribute to the strengthening of cost accounting and improvement in the planning of economic-financial activities and in the state of accounting and reporting on kolkhozes and sovkhozes and create the conditions necessary for prompt settlements of accounts connected with wages and with suppliers and contractors.

The system of price formation, which creates the most favored economic regime by means of budgetary redistributions, ensures and stimulates high and stable rates of intensification of agricultural production and regulates the proportionality of development of national economic sectors and the equivalence of exchange among them. However, the system also has a number of significant shortcomings. Sometimes it weakens intra- and intersectorial economic incentives and cost accounting principles. It seems that indirect price forms and methods of stimulation should be gradually given up in the future. In accordance with the decision of the May (1982) Plenum of the CPSU Central Committee a part of the budgetary subsidy compensating for an increase in the cost of industrial output and in the rates for services has been included in the purchase prices of agricultural output.

Since agriculture is no longer compensated for the difference in the prices of motor gasoline and other petroleum products, which arose in connection with the introduction of new wholesale prices and rates on 1 January 1982, as of 1983 agricultural enterprises have paid for these expenditures from their own funds. With due regard for this in our republic alone since 1 January 1983 the purchase prices of agricultural output have been increased by the total amount of 63 million rubles. Naturally, agricultural enterprises should use these resources with special care.

Under the conditions of the dynamic development of the national economy the observance of optimum proportions, at the same time, presupposes both the stability and flexibility of the economic mechanism. The agricultural enterprise should be firmly confident that definite possibilities to finance its activity itself depend on its economic situation. This serves as the basis for securing economic interests. At the same time, the changes in production relations brought about by scientific and technical progress, in turn, require a flexible centralized system of maneuvering resources. Efficient means of overcoming this contradiction are needed.

The transfer of the entire set of expenditures to a full self-recovery, in which the necessity for the redistribution of funds for the needs of agriculture through the budget decreases, seems promising. However, with intrasystem redistribution functions the economic mechanism should ensure a flexible, continuous and smooth circulation of financial and material resources in all farms, enterprises and national economic sectors. For the regulation of proportionality in the national economy budget financing will also be retained to a certain extent.

In agroindustrial integration a flexible combination of the sectorial and territorial principles of the organization and management of the economic mechanism is of great importance for an improvement and increase in its efficiency in agriculture. The territorial sectorial association is the modern form of management and organization of the economic mechanism. The 26th CPSU Congress noted that, along with overall mechanization, chemicalization and reclamation, the further specialization and concentration of production on the basis of the intensification of interfarm cooperation was an important task in the development of agriculture. A harmonious development of the agroindustrial complex depends in large measure on the accomplishment of this task.

Interfarm construction organizations and enterprises producing building materials were established primarily over a period of many years. They were not connected with the cooperation of basic production, although they contributed to this.

Associations serving the specialization and concentration of basic agricultural production and engaged in the processing of output began to especially quickly develop in the 1970's. The number of industrial-type poultry farms and hog breeding complexes increased. They were a big step on the path of the specialization, concentration and overall mechanization of production, demonstrated their economic efficiency, ensured a more productive utilization of equipment and manpower and, thereby, a decrease in material expenditures per unit of output and created conditions for overcoming the limitation and isolation of kolkhoz-sovkhoz cost accounting and the contradictions between the centralization and decentralization of economic interests.

Centralized economic incentive funds are important economic levers of effect on production and social development in the RAPO. The differentiation of the deductions of farms into these funds helps to some degree to equalize the conditions of management. The approximation of the two forms of ownership also occurs through the centralization of financial resources invested in the specialization and concentration of production and in the development of the social and cultural sphere.

As stated, farms deduct capital into the centralized funds of the RAPO in a differentiated manner. Their amount depends on the evaluation of the resources assigned to farms (land, productive capital and manpower). However, only a small percent of the profit is redistributed in a centralized manner, most of it remaining at the disposal of kolkhozes and sovkhozes. Thereby, three tasks are accomplished simultaneously: 1) the program for the integral development of a rayon and for pulling up lagging links is realized; 2) the economic responsibility of farms for the degree of efficiency of utilization of the resources assigned to them is increased; 3) the initiative and interest of farms in better economic results are maintained.

The experience of the Vilyandiskiy RAPO established on an experimental basis showed the effectiveness of the overall approach to the management of territorial APK at the rayon level. The integral and balanced production, economic and social development occurring in stages and within the framework of a single program has given a significant effect in the utilization of resources (especially capital investments). As a result of concentration more than one-half of the dairy herd has been placed in large complexes. A hog breeding combine has been established and is expanding gradually and the construction of a state-cooperative mixed feed plant with an elevator and drying facilities, of agrochemical centers and so forth is envisaged. The realization of the social part of the program--construction with joint state and cooperative funds of modern settlements with school, sports, medical, cultural and trade complexes and with a convenient communication network--is of special importance. The Vilyandi Association, despite the extremely unfavorable weather conditions of 1978, 1979 and 1981, also attained high production results. Agroindustrial associations have now been established in all rayons.

The May (1982) Plenum of the CPSU Central Committee gave a positive evaluation to the experience of the Estonian SSR and other republics in the strengthening of the rayon link and establishment of the RAPO. The Politburo of the CPSU Central Committee approved the proposals of the Central Committee of the Communist Party of Estonia and of the Central Committee of the Communist Party of Georgia on improvement in the structure of management of the APK.

As is well known, a cost accounting agroindustrial association headed by a council was established in the Estonian SSR in March of this year. As a single organ of management of the republic's APK it performs interdepartmental functions, combining the territorial, sectorial and program-goal principles of planning and financing the activity of the APK.

The ESSR Agroprom /Agroindustrial Association/ is entrusted with the following tasks: creation of stable economic conditions for the cost accounting activity of every link of the agroindustrial complex, stimulation of the development of lagging sectors and rayon agroindustrial associations, equalization of the economic conditions of management and increase in the responsibility for profitable production management; constant improvement in the economic mechanism and intersectorial economic production relations contributing to ensuring the technological and organizational unity of the APK and to a strict orientation of all its sectors toward end results; implementation of measures for the further development of the private subsidiary plots of citizens and of the subsidiary farms of industrial enterprises as an integral part of the republic's food complex; improvement in the housing and cultural-general conditions of rural residents and establishment of a modern social infrastructure of the APK; development and implementation of measures for the protection of the environment and for a rational utilization of natural resources.

The ESSR Agroprom creates centralized funds from the deductions of ministries and departments forming part of the republic APK, as well as of rayon APK, the evaluation of the agroeconomic potential of which is higher than the average republic one.

The mechanism of centralized funds as a part of the economic mechanism should not lead to the equalization of the levels of development and to the weakening of advanced rayons and farms. The results of better work and of a more efficient utilization of the resource potential should also give a significant material gain. However, the farm, obtaining a scarce resource, bears great responsibility: A part of the effect according to the standard evaluation should be placed at the disposal of rayon APK and the republic APK and be used for the realization of the general program for economic and social development, including for pulling up lagging links.

Finally, the role of contractual relations envisaging clear mutual obligations of economic partners and compensation for material damage in case of their breach should be sharply increased in the economic mechanism of the republic APK. The relations among economic partners inside the republic complex, as well as between it and the links of the Union APK, should be built on a firm contractual basis. It seems that the firm plan for the sale of agricultural output to the state determined for the republic should be fixed in a special

contract providing for the appropriate counterdeliveries, their products list, volumes, dates, prices and so forth. The output remaining after the fulfillment of planning-contractual obligations can become the object of interregional exchange also carried out on the basis of contractual relations. This will ensure not only the stability of economic relations (naturally, with due regard for the specific nature of agriculture), but also a more effective system of stimulation of the growth of food production and increase in the responsibility of republic bodies for the population's supply.

A reorganization of the economic management of the APK in accordance with the decisions of the May (1982) Plenum of the CPSU Central Committee will make it possible to increase the efficiency of management, planning, financing, crediting and material and technical supply, to more fully utilize the resources of kolkhozes and sovkhozes and the possibilities of rayon agroindustrial associations for intersectorial cooperation and to simplify and lower the cost of management at rayon and republic levels. The measures envisaged by the recent decree of the CPSU Central Committee and the USSR Council of Ministers "On Improvement in the Economic Relations of Agriculture With Other National Economic Sectors" are also directed toward the realization of these tasks.

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## AGRO-ECONOMICS AND ORGANIZATION

### STRENGTHENING COST ACCOUNTING, PRICING, ECONOMIC RELATIONS WITHIN APK

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[Article by A. N. Masyuk, doctor of economics, professor, department manager VNIESKh [All-Union Scientific Research Institute for Agricultural Economics: "Khozraschet Prices and Economic Stimulation in the Agro-industrial Complex"]]

[Text] In the course of implementing the CPSU agrarian policy there has been a sizable increase in agriculture's production potential. In the past decade fixed productive capital has almost tripled, there has been a great increase in improved land area and deliveries of mineral fertilizers and other material resources have grown. Problems in the efficient and rational use of land, equipment and other material resources and capital investments in agriculture are now acquiring basic significance. At the June (1983) CPSU Central Committee Plenum, comrade Yu. V. Andropov stressed: "...it is above all necessary to bring order into what we have, to ensure the most intelligent use of the nation's production and scientific-technical potential and overcome lagging in sectors such as agriculture, transportation and the service sphere".

All this makes necessary basically new approaches to organizing production and increasing the responsibility of kolkhoz and sovkhoz managers, specialists and labor collectives for the complete use of internal reserves. Exceptionally great importance should be given to strengthening plan, state and labor discipline and to the extensive introduction of collective contracts.

The key to solving these problems is the very rapid introduction and improvements in the efficiency of cost accounting [khozraschet] on kolkhozes and sovkhozes.

Strengthening khozraschet is one of the main problems of improvements in the economic mechanism. This is above all essential at enterprises and associations. Increases in procurement prices and the introduction of markups, improvements in RAPO [Rayon agro-industrial association] planning and economic relationships, strengthened material interest in production results and the retention of cadre at kolkhoz and sovkhoz units have created the conditions for workable khozraschet. It has become necessary to systematically introduce the Leninist khozraschet. In effect, this means that it is essential to achieve a situation where enterprises would be completely responsible for the results from their activities, so that, as V. I. Lenin demanded, there would be implemented "...the strictest control on the part of society and the state over the measures of labor

and consumption..." (Pol. sobr. soch., T. 33, s. 97); while material incentives would be according to the principle of "allowing for the amount of labor which goes into the social fund. Consequently, each workers receives from society just as much as he gave" (Op. cit. p. 97).

Khozraschet is not simple a method of running a socialist economy. It is one of the most important facets of socialism's production relations. Khozraschet has an objective nature and is immanently inherent in our system.

Khozraschet relations are multilevel. They cover the state's economic relations with enterprises, relations between enterprises and within them. These relations are based on principles which reflect socialism's fundamental norms and rules of production relations. Above all these are: the combination of centrally planned management with the granting of enterprises definite rights and initiatives in conducting their operations, the functioning of enterprises on the basis of self-financing and the profitability of operations, the unwavering observation of conditions of economy, material and moral incentives to labor in strict accordance with its quality and quantity and the strictest control by the ruble over enterprise activity.

The khozraschet method is used where the enterprise is relatively independent and has a known degree of economic individuation. This, to a certain extent, is the basis for the specific responsibility of labor collectives for their work results and their interests in improving them. Lenin stressed that trusts and enterprises on khozraschet bear full responsibility for not operating at a loss. This responsibility is just as important under developed socialism.

An enterprise's responsibility for the results of its activities is measured through profitable work and the use of its own resources to finance expanded reproduction and material incentives. The implementation of the decisions of the May (1982) CPSU Central Committee Plenum has created conditions for transforming the majority of farms to this form of relations with the state.

It should concurrently be noted that the formalization of khozraschet has, in the past, led to the considerable differentiation of farms with respect to their economic development levels. This led to the temporary retention of budget financing for sovkhozes and to its introduction at kolkhozes to solve a number of social problems. However, budget allocations do not free sovkhozes and kolkhozes from the responsibility of "earning" resources on their own. On the contrary, state help obligates them to find more efficient solutions to economic development problems and to raise farm output to levels making it possible to get along without budget resources. The task is to guarantee the maximum efficiency of budget allocations in the solution of farm economic and social development problems and to make them an effective tool for achieving high levels of utilization for agriculture's productive potential.

The system of khozraschet relations induces labor collectives to make highly effective use of productive resources and strictly meet their obligations to the state. It also is an incentive to good work and high levels of results.

The proper combination of social, collective and personal economic interests is the essence of khozraschet relations. This is an objective requirement of socialist society. Social interests are met through the rapid development of production, the steady increase in its efficiency and in the expansion of the consumption fund, i. e. in the systematic improvement of the enterprise's final work results. Lenin wrote that: "Personal interest raises production..." (Poln. sobr. soch., T. 44, p. 152). Naturally, personal interest should not contradict social interests. Personal economic interests in the khozraschet mechanism should be organically linked to the final production results of the enterprise as a whole and each of its production units. This is why it is essential to strengthen the orientation of khozraschet and the entire economic mechanism towards achieving good final results.

In this regard the role of collective economic interests in khozraschet is growing. The objective laws for the development of large scale mechanized production are such that its final results have an increasingly greater dependence upon the efforts and coordinated work of the enterprise's entire collective. However, collective interests are still not sufficiently linked to final production results. A considerable share of the labor at kolkhozes and sovkhozes is not directly tied to the quality, time and prime cost of output. The formation of economic stimulation funds is also insufficiently linked to these indicators.

In accordance with the decisions of the May (1982) CPSU Central Committee Plenum measures are being implemented to improve material incentives to labor at kolkhozes and sovkhozes. These measures are above all directed towards strengthening intrafarm accounts and the introduction of progressive forms of work organization. In order to introduce collective contracts in agricultural production, the directors of sovkhozes and other state agricultural enterprises have been given the right to establish five year term stable rates and the amounts of supplementary payments for the output of brigades and links working under collective contracts. These are based on the planned wage rate fund and increased up to 150 percent, depending upon the level of yields and animal productivity. It has also been decided to supplement the procedure existing at sovkhozes and other state agricultural enterprises whereby wages are replaced by payments in kind of a number of farm products. The following method of awarding bonuses has been established for management workers and specialists at sovkhozes and other state agricultural enterprises: For each percent increase in the farm's general level of profitability compared to the levels attained in the preceding the list of low profit and unprofitable farms from subsidized to general conditions of financing. In addition, salaries have been increased for management workers, specialists and employees at sovkhozes and other state agricultural enterprises. It is recommended that kolkhozes introduce similar salaries. An entire series of benefits has been provided for management workers and specialists at kolkhozes, sovkhozes and other state agricultural enterprises. In order to retain animal husbandry workers, wage supplements have been introduced for continuous service on a given farm.

Especially great importance must be placed upon the introduction of collective contracts with regards to the improvement of khozraschet relations at kolkhozes

and sovkhozes. This form of organizing and paying labor most closely corresponds to socialist production relations and is most effectively included in khozraschet relation. It is not easy to organize production on the basis of collective contracts. It is necessary, on the one hand, to create collectives capable of friendly, coordinated and disciplined work under the new conditions, and on the other, to develop a system of relations within brigades and links using collective contracts. At the same time, it is very important to establish proper relations between the enterprise management (kolkhoz board) and brigades and links on collective contracts. This requires improvements in intrafarm management methods and increases in the responsibilities and efforts of management workers and specialists to levels which would permit irreproachable fulfillment of management (board) obligations to brigades and links on collective contract and to give them skilled assistance.

The implementation of the decisions made at the May (1982) CPSU Central Committee Plenum is bringing about a radical change in attitudes towards intrafarm accounts and their indisputable strengthening at all levels of kolkhoz and sovkhoz production. This is one of the essentials for the successful implementation of the Food Program and plans for the economic and social development of agriculture. This obviously also applies equally to enterprises and organizations in other sectors and to rayon and oblast agro-industrial associations. The organization of RAPO further developed khozraschet as a method of planned production. In addition to the development of economic relations within RAPOs into farm management ties, these organizations' councils have been given the right to create centralized funds for material incentives, social-cultural development, residential construction and production development. These funds are created through deductions from resources of enterprises and organizations within the association.

If necessary, RAPO councils have the right, upon the agreement of their enterprises and organizations, to redistribute between these units 10-15 percent of the material and technical resources allocated. Upon the agreement of superior organs they can redistribute capital investments unutilized by enterprises and organizations.

It has been established that rayon (inter-rayon) production associations of Sel'khoztekhnika and Sel'khozhimiya, water resources repair and operation organizations and rayon production associations of "Poliv" are to return to kolkhozes, sovkhozes and other agricultural enterprises and organizations 50 percent of the above plan profits from services rendered to them.

A number of measures have been implemented to improve planning and management and to strengthen khozraschet at rayon agro-industrial associations.

Improvements in the effectiveness of khozraschet and its greater orientation towards final production results are tied to further improvements in the economic mechanism. It is above all essential that khozraschet principles be fundamental to the activities of all elements of the national economy and determine the content of economic tools and methods as well as production stimuli. Such an approach requires khozraschet relations at all levels in the hierarchy of management and administration, with functional forms suitable to each element.

The ensurance of normal functioning conditions for production operations is extremely important in strengthening khozraschet. This has become an acute problem for kolkhozes and sovkhozes, the material resources of which are to a considerable extent produced in industrial sectors.

The economic mechanism's orientation towards the achievement of good final results in agriculture is tied to attaining high levels of work coordination between all elements of the agro-industrial complex.

The development and implementation of measures to further improve the management of the agro-industrial complex resulted from departmental fragmentation which had led to serious shortcomings in the planning, material-technical supply, specialization and rational location of production, hindered the solution of problems in comprehensive rural development and given rise to parallelism and duplication.

Enterprises and organizations providing production services to agriculture had systems of planning and economic incentives which were oriented towards achieving high sector output indicators, essentially intermediate results in the production of APK [agro-industrial complex] final output. The same must be said about sectors supplying material resources to agriculture. The system of enterprise and organization responsibility for production services and material-technical supply to agriculture was limited to responsibility for the fulfillment of sector plans and economic norms and partially for the fulfillment of contractual obligations to kolkhozes and sovkhozes. Enterprises and organizations servicing agriculture had weak organizational and economic ties to kolkhozes and sovkhozes. Consequently, they were not oriented towards attaining good final results for the agro-industrial complex.

This problem has two basic aspects -- organizational and economic. The essence of the organizational aspect consists of radical improvements in the management of agriculture and other sectors of the agro-industrial complex, the attainment of high levels of activity coordination between all elements in the APK, especially at the rayon level, where APK enterprises and organizations have direct production ties. Rayon, oblast (kрай), republic and autonomous republic agro-industrial associations have been created to solve these problems.

The essence of the economic aspect consists in the improvement of planning, price formation and economic relations in the APK as well as finance and credits. Better regulations on the planning of agriculture and the entire agroindustrial complex have been introduced.

The plan for national economic and social development has indicators for the APK with breakdowns by sector.

Control figures for the purchase volumes of agricultural products, raw materials and the production of industrial goods in the USSR agro-industrial complex are supplemented by control figures for the limits on capital investments, and the delivery volumes for mineral fertilizers and agricultural equipment and by other indicators. The creation of favorable economic, social and organizational

conditions for the effective operation of agricultural enterprises is the most important direction in the orientation of the economic mechanism towards improving APK final work results.

In accordance with the CPSU Central Committee and USSR Council of Ministers Decree: "On Measures for Improving the Economic Mechanism and Strengthening the Economies of Kolkhozes and Sovkhozes", a complex of measures has been implemented to create stable economic conditions at farms, to strengthen their khozraschet and to accelerate the economic and social development of farms insufficiently supplied with fixed capital and not having resources sufficient for expanded reproduction.

On 1 January 1983 purchase prices for agricultural products were increased and markups were added to purchase prices for output sold to the state by low profitability and unprofitable kolkhozes and sovkhozes. These increases total 16 billion rubles annually. The earnings of kolkhozes and sovkhozes from output sales are growing by 21 billion rubles annually, or by 25 percent (PRAVDA, 1 Oct 82). Markups on purchase prices were introduced for 1983-1985. The size of these markups is not to exceed 75 percent of purchase prices (average purchase prices of potatoes and vegetables), and they are only for farms in poorer natural and economic situations. Markups should not cover for waste and oversights in farm operations. They are differentiated by groups of farms (individual farms) and types of agricultural products sold to the state, depending upon their loss and profitability levels. Consideration is given to farm needs for resources to cover losses due to objective natural and economic conditions and to the necessity for a minimal level of profitability to ensure growth in production and sales to the state.

As a rule, the list of low profitability and unprofitable farms which are paid markups on purchase price includes enterprises with profitability not exceeding 10 percent. In some cases it can also include farms with greater profitability, but not able to pay off, with their own resources, USSR Gosbank credits for financing capital investments and other plan measures, which have low levels of fixed capital and small profits (net incomes) and newly organized enterprises with planned profitability of up to 10 percent.

As a rule, this list of farms does not include poultry factories and zverosovkhozy [Wild animal raising sovkhozes] and sovkhozes having large state animal raising complexes for feeding cattle and swine which are supplied with concentrated feeds from state resources, as well as greenhouse combines.

For many farms the increased earnings from state sales due to higher purchase prices will be greater than the profits they obtained last year. These measures create a good basis for strengthening khozraschet, developing economic initiative, improving the entire process of expanded reproduction, creating a more favorable psychological environment and reinforcing confidence about completing programs for further economic and social development.

Previously, shortcomings in price formation for agricultural output and in coordinating them with prices for industrial products used by agriculture had a negative effect upon the economies of many kolkhozes and sovkhozes and promoted the formalization of khozraschet. This was reflected in the weak economic interest farms had in the production of many products and in some farms' shortages of resources to finance expanded reproduction and provide material incentives to workers.

For a number of reasons kolkhozes and sovkhozes have accumulated large debts. Especially difficult farm financing conditions have evolved at low profitability and unprofitable enterprises. In order to improve economic conditions at such farms debts on previously overdue loans totalling 9.7 billion rubles have been written off. Their overdue loans amount to 11.08 billion rubles. In view of the fact that some kolkhozes still do not have sufficient resources to build and maintain housing and social-cultural projects, the CPSU Central Committee and the USSR Council of Ministers have decided to give them financial assistance. For this purpose, kolkhozes with insufficient fixed capital and not having resources for expanded reproduction, have been included under the existing procedure for the state budget financing of planned outlays for constructing housing, children's preschool institutions, clubs and other cultural-service and communal projects, intrafarm roads, and for maintaining preschool and cultural-educational institutions and pioneer camps. These same kolkhozes are allocated budget resources for the payment of insurance premiums in the manner intended for kolkhozes on list for subsidized budget financing. Annual budget allocations for these purposes amount to 3.3 billion rubles. In accordance with present statutes, kolkhozes which fall in this category of subsidized budget financing are included in the list approved by union republic councils of ministers.

The implementation of measures for the economic mechanism's improvement through improvements in farm operating conditions, above all at low profitability and unprofitable farms, do not solve all problems, but only create favorable conditions for their solution. The matter now lies with kolkhoz and sovkhoz collectives and their partners in agricultural production.

The realization of these measures for improving economic incentives to production and the general economic conditions of farm operation have considerably changed the agricultural situation for the better. Even this year one can expect a sharp decline in the number of unprofitable farms and, most importantly, a noticeable increase in animal product output. This can be asserted with confidence.

In agricultural product price formation great importance is had by changes in wholesale prices of industrial products sold to agriculture. This protects farm economic interests.

If there are changes in the ratios of effective purchase prices for agricultural products to the wholesale prices for industrial products sold to agriculture, determined with consideration given to the national economic efficiency of these latter goods, and to rates for services rendered to farms, the USSR State Committee on Prices should, upon agreement with the appropriate ministries and departments, give the USSR Council of Ministers proposals for agricultural product prices and markups. These proposals should be made simultaneously with the presentation of the draft plan for the economic and social development of the USSR for the next five-year plan. For this purpose, beginning in 1983 indexes will be made of agricultural product purchase prices, wholesale prices of industrial products sold to agriculture and rates for services rendered to farms and other agricultural organizations. This approach will be more able to maintain a definite level of exchange equivalence, and eliminate negative factors not depending upon the work of kolkhozes and sovkhozes.

It is important to stress the outstanding features of this approach. In the next five-year plan purchase prices for agricultural products should be based on the necessity of ensuring sector norms for aggregate profitability, taking into consideration planned volumes for the production and purchase of agricultural products, the capital available at farms, wage levels and other planned outlays for agricultural production. These norms will also include intended measures for increasing agricultural production efficiency, improving the use of fixed and circulating capital and reducing material outlays.

The practical introduction of better economic relations between elements of the APK is another important direction in orienting the economic mechanism towards attaining better final results and in strengthening kholzraschet.

The principles of agriculture's economic relations with other sectors introduced in accordance with the May (1982) CPSU Central Committee Plenum mainly have to do with increasing the responsibility of service enterprises and organizations for growth in agricultural production and procurements and in intensifying their interest in attaining good final results and improvements in the economic efficiency of agricultural production. Beginning in 1983, the basic indicators for evaluating the activities of these enterprises and organizations are, above all, to be increases in agricultural production and fulfillment of purchase plans. Thus, the activities of rayon (inter-rayon) production associations and departments of Sel'khoztekhnika are evaluated as follows: for growth in the production of agricultural products and increases in labor productivity in farms being serviced compared to the levels attained in the preceding five years, the fulfillment of contractual obligations for all types of production-technical support to kolkhozes, sovkhozes and other agricultural enterprises and organizations, the quality of work and services and reductions in their costs. The activities of rayon (inter-rayon) production associations of Sel'khozhimiya and enterprises and organizations in this system are evaluated according to: the growth in the production of plant products in the farms serviced compared to the levels attained in the preceding five years; the returns [okupayemost'] on mineral fertilizers, plant protection agents and other chemical agents; the fulfillment of contractual obligations for agrochemical services to kolkhozes, sovkhozes and other agricultural enterprises and organizations, the quality of work and reductions in costs.

The activities of water resources repair and operating organizations and rayon production associations of "Poliv" are evaluated according to: the growth in plant product output on improved land in the farms serviced compared to the levels attained in the preceding five years, through increased yields; the attainment of the planned yield from agricultural crops on newly introduced land; the fulfillment of contractual obligations for servicing kolkhozes, sovkhozes and other agricultural enterprises and organizations and the rational use of water and material resources.

Naturally servicing enterprises and organizations cannot be responsible for the activities of kolkhozes, sovkhozes and other agricultural enterprises and

organization. Therefore, the evaluation of their activities, and consequently, their responsibilities, is based on the results of cooperative work between serviced and servicing enterprises and organizations, upon the economical, careful use of material, monetary and labor resource by the enterprises and organizations being serviced. The contribution of servicing enterprises and organizations to the final results of APK work is shown primarily by improvements in the above indicators, above all, by the growth in agricultural output resulting from joint activities with the farms being serviced.

The functions of procurement organizations and enterprises are different, therefore their activities are evaluated differently: According to the fulfillment of state plans for the procurement of agricultural products and raw materials; the increase in purchase volumes compared to the levels in the preceding five years; the levels of loss prevention; the timeliness of processing and delivering customers a broad assortment of high quality products and reductions in outlays for procurement, storage and processing.

It is important to stress that evaluations of the activities of service and procurement organizations according to these criteria are directly tied to material incentives to workers in these enterprises and organization. Their interest in attaining high final indicators has become specific and concrete. Since 1983 norms for the formation of the material incentives fund and the social-cultural measures and housing construction fund at enterprises and organizations servicing kolkhozes, sovkhozes and other agricultural enterprises and organizations are dependent upon the above indicators.

It has been established that one of the basic indicators for the formation of material incentives funds at procurement and production enterprises and organizations which, together with their main activities, also purchase agricultural products on contract, will be the fulfillment of plans for the purchase of such products.

In order to give greater incentives to management workers and specialists at rayon enterprises and organizations in USSR Goskomsel'khoztekhnika, Soyuzsel'khozkhimiya, water management operating organizations in the USSR Ministry of Land Reclamation and Water Resources and other units within agro-industrial associations, their bonuses are to be based on the year's results in increasing agricultural production and profits at the serviced kolkhozes and sovkhozes compared to the levels attained in the preceding five years, while bonuses during the year are based on the fulfillment of contractual obligations and the rational use of material resources. Bonuses for management workers and specialists at procurement enterprises and organizations are linked to procurement plan fulfillment.

Starting in 1983 there is an increase in the size of bonuses from the material incentives fund for basic results of management activity in purchase plan fulfillment which are granted to management and engineering-technical workers and specialists at state procurement enterprises and organizations and units which in addition to their main activities also purchase agricultural products on forward contracts. The total increases per worker are not greater than two

months pay per year and the total bonuses awarded to a worker should not exceed the established maximum. USSR ministries and departments involved in state purchases of agricultural products have been authorized to pay individual workers in these categories bonuses above the set maximum for the fulfillment of purchase plans and for exceeding the average levels attained in the preceding five-year plan (the bonus should not exceed 60 percent of the monthly salary). Salaries of management workers and specialists in rayon associations of Sel'khoztekhnika and Sel'khozhimiya now depend upon the volumes of agricultural output sold in the rayons serviced.

Thus, the system of material incentives to enterprises and organizations servicing farms is to a considerable extent oriented towards obtaining good final results, expressed primarily in increases in agricultural production and sales to the state. To supplement this, kolkhozes and sovkhozes have been authorized and urged to sell grain, potatoes, vegetables, fruits, berries, grapes, melons and feed crops to workers at rayon (inter-rayon) production associations and departments of Sel'khoztekhnika, Sel'khozhimiya, water management repair and operating organizations and rayon production associations of "Poliv", who have participated in the technological process of agricultural production. These products are sold in a manner established for workers and kolkhoz farmers at the farms serviced and within the limits for total payments in kind covered by existing legislation.

There is special importance in kolkhoz and sovkhoz relations with service enterprises and organizations regarding the volume, time, quality and cost of work and services. The decisions of the May (1982) Plenum made substantial changes in these relations, both on an organizational and economic level. These changes helped improve planning, contractual relationships and accounts between AIC enterprises and organizations. They are also directed at creating a unity of interests among farms and service enterprises and organizations and at orienting the system of relations towards improvements in final results in agro-industrial associations, above all agricultural enterprises.

Rayon agro-industrial associations have been given the right to approve, on the basis of standard norms, fees [rastsenki] and rates for work and services rendered by enterprises and organizations, regardless of their departmental subordination. Wholesale prices for major repairs on equipment, rates and APK for transportation, construction-installation work and markups for supply and sales organizations are not subject to RAPO approval. They are set in the established manner.

Methodological rules have been introduced to determine the fees (rates) approved by RAPO. These rules set the norms for profitability (the ratio of profits to the prime cost of work or services) at 8 percent. Upon receiving these norms, the ministries and departments involved can amend them during the 18 months prior to the beginning of the next five-year plan. These profitability norms are only the basis for determining the level of fees (rates). They are used together with economically substantiated outlays per unit of work and services. The actual levels of work and service profitability are influenced by factors such as the fulfillment of production plans by the farms being serviced and the actual prime cost of work and services. This also applies to work and services

which are part of production processes, that is, part of the joint, cooperative work of kolkhozes, sovkhozes and service units. Naturally, both sides should bear responsibility for joint work results and have a specific interest in improving final results. The actual profitability norms for work and services in production processes are directly dependent upon production plan fulfillment by the farm being serviced. When rayon (inter-rayon) production associations and departments of Sel'khoztekhnika and Sel'khozhimiya, water management repair and operating organizations and rayon production associations of "Poliv" complete work which is part of the agricultural production process, payments to service enterprises and organizations during the year are based upon 92 percent of the cost of the work or services actually completed, using prices, rates and fees set in the established manner. Consequently, during the year accounts use the prime costs for work and services based on these prices, norms and rates. Prior to the time kolkhoz and sovkhoz production results are made known, the profits of service units from this part of their activities can be formed only through reductions in the prime costs of the work and services performed.

Supplementary payments for the year's work results are set at 1 percent of the value of the work and services actually performed for each percent fulfillment above 92 percent and overfulfillment of production plans in the serviced kolkhozes, sovkhozes, other agricultural enterprises and organizations and their production subdivisions.

Assume that the fee per unit of work is set at 3 rubles 50 kopecks. During the year 3 rubles 22 kopecks are paid per unit of work ( $3 \text{ rubles } 50 \text{ kopecks} \times 0.92$ ). If the production plan is 100 percent fulfilled, then the supplementary payment per unit of work is 28 kopecks ( $3 \text{ rubles } 50 \text{ kopecks} \times 0.08$ ), while if it is 96 percent fulfilled it is only 14 kopecks ( $3 \text{ rubles } 50 \text{ kopecks} \times 0.04$ ).

Supplementary payments to Sel'khoztekhnika production associations and departments take into account agricultural production in general and its various types; and such payments to Sel'khozhimiya -- plant production and its various types. Water management repair and operating organizations and rayon production associations of "Poliv" receive these payments on the basis of plant product output on reclaimed lands. All these rules are directed towards strengthening khozraschet on kolkhozes, sovkhozes and at service enterprises and organization.

Another series of measures has been taken to strengthen khozraschet, above all to improve responsibility for ensuring agriculture's more effective operation. There has been an increase in the economic responsibility of factories manufacturing products used by agriculture. If, due to the fault of enterprises manufacturing tractors, motor vehicles and agricultural machinery, these items break down within the period covered by guarantees, these enterprises compensate Sel'khoztekhnika production associations and departments for repair expenses and losses, including fines, penalties and other sums paid to farms in connection with the sales of poor quality products and down time in excess of limits, in cases where the manufacturing enterprise has not fulfilled its obligations to dispatch spare parts to the reserve stock for guaranteed repairs.

Kolkhozes, sovkhozes and other agricultural enterprises have the right to recover expenses for non-acceptance from Sel'khoztekhnika production associations or departments which result from using their own resources to repair

tractors, motor vehicles and agricultural machinery which have broken down within guaranteed periods due to the fault of manufacturing enterprises (specialized repair enterprises). Claims are made according to set fees and fines. In the same manner, Sel'khoztekhnika associations or departments can make claims against manufacturing enterprises and specialized repair enterprises. In cases of delays or failures to deliver mineral fertilizers, plant protection agents and other chemicals which are the manufacturing enterprise's fault, it pays Soyuzsel'khozkhimiya associations, enterprises and organizations fines amounting to 12 percent of the value of the products not delivered on time.

All these measures worked out by the May (1982) Plenum will make possible radical improvements in contractual relations, one of the main foundations of khorraschet in the agro-industrial complex. Conditions have been created to contractually solve such fundamentally important problems as improvements in the responsibilities of the parties involved, in their economic interest to fulfill contractual obligations and to achieve closer ties between contractual obligations and plans for economic and social development.

Contractual relations are especially important for rayon agro-industrial associations. The entire system of economic relations between RAPO enterprises and organizations is based on contracts. The fulfillment of contractual obligations by service enterprises and organizations has become the main criterion for evaluating their work and for providing material incentives to managers and specialists.

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## TILLING AND CROPPING TECHNOLOGY

### PROBLEMS IN ADAPTING BETTER TILLAGE METHODS IN ORENBURG OBLAST

Moscow SEL'SKAYA ZHIZN' in Russian 14 Dec 83 p 2

/Article by I. Gridasov, director of the Orenburg Scientific Research Institute of Agriculture, Orenburg Oblast: "One Step Higher"/

/Text/ The outgoing year gladdened Orenburg farmers: About 15 quintals of grain per hectare were gathered and on advanced farms the yield of grain crops was even higher. This made it possible to sell more than 4.1 million tons of grain to the state and to store all the needed seeds. This result is the fourth in succession in the entire history of the oblast.

What made it possible to rise a step higher? We believe that the rise in the general standard of farming based on the introduction of scientifically substantiated systems on every kolkhoz and sovkhoz played the main role. This work was also done previously, but was especially activated in the last 2 years. The time when many farms, essentially, did not have at their disposal a single hectare of fallow, sowed in unjustifiably overstated volumes, for example, barley and placed wheat after wheat or barley on the same field for a number of years became a thing of the past.

True, even then there were examples of a different approach to the utilization of arable land and of a long-term orientation in economic activity. Let us take the Kolkhoz imeni Karl Marx in Buzulukskiy Rayon, where Sergey Nikolayevich Bochkarev has been working as the chief agronomist for a long time. Farming has long been carried out here on a strictly scientific basis, a fight has been waged for an increase in soil fertility and the structure of sown areas and high-grade agricultural techniques have been improved constantly. Fallow has been prepared early and in a high-quality manner and both organic and mineral fertilizers have been applied to these fields in optimum norms. Naturally, the farm has obtained high and stable harvests of all agricultural crops. Such an approach to work with land is also characteristic of the Kolkhoz imeni Kuybyshev and the Kolkhoz imeni Komintern in Asekeyevskiy Rayon, the Sovetskiy Sovkhoz in Akbulakskiy Rayon, the Sovkhoz imeni 19 Parts"yezda and the Sovkhoz imeni Gagarin in Orenburgskiy Rayon and the oblast's educational and experimental farms. Other collectives try to follow their example: Scientifically substantiated farming systems are being introduced on 355 kolkhozes and 182 sovkhozes.

At the same time, it must be admitted that as yet very little has been done. This is evident from the following fact. The Cheben'kovskiy Sovkhoz is located next to the experimental model farm of the Scientific Research Institute of Agriculture. In the quality index their land is the same. On the other hand, the crop rotations existing on the sovkhoz are disrupted constantly and farming systems taking into consideration soil protection are introduced slowly. Fields are very weedy and technological operations are conducted with deviations. As a result, in 1971-1980 the grain harvest on this farm, as compared with its neighbors, was 6.5 quintals per hectare lower and in the last 3 years, almost one-half.

Another thing is also clear: Farmers need considerable help. The problem of the protection and careful utilization of land and increase in its fertility is now especially urgent. In the last 15 years the load on arable land has tripled and fields have been subjected to water and wind erosion and do not obtain sufficient organic and mineral fertilizers. And although a great deal is done to increase the strength of land, the measures taken do not meet present requirements. For example, in the last 5 to 7 years nonmoldboard cultivation has increased negligibly, that is, from 1.5 to 1.7 million hectares, including subsurface cultivation, from 815,000 to 1.4 million hectares, and sowing with antierosion seeders, from 1 to 1.7 million hectares. Areas of strip and contour-strip farming, of coulisse cultivation on fallow and so forth are not increasing.

Of course, managers and specialists are to blame for this. However, there are also objective reasons. The soil protective farming system requires a set of trailed implements in sufficient quantities. However, according to the estimates of agronomists, farms have, for example, 3,500, instead of 10,000 subsurface cultivators and diggers of all brands. There are 20,000 stubble seeders, while 35,000 are needed. About 40,000 harrows of the BIG-3 brand are needed, while one-fifth of this number is available. The situation with respect to slitters, special plows and other implements used in work on solonets is even worse.

An important role in the increase in farm harvests is assigned to fertilizers. Calculations show that, in order to obtain the planned harvests of grain and other agricultural crops, the deliveries of phosphorus fertilizers to the oblast should be augmented.

The intensification of farming has somewhat changed the point of view of agricultural specialists in the oblast on the application of nitrogen fertilizers. With the growth of harvests and the introduction of subsurface cultivation the need for them is intensifying. An increase in the application of nitrogen fertilizers is also necessary in order to ensure a high quality of grain and feed. I would like to mention that the quality of grain has deteriorated in the last 30 years. During the 10th Five-Year Plan, as compared with 1953-1963, the protein content of wheat, for example, decreased by 2.6 percent, on the average. In order to provide grain and other agricultural crops with nitrogen, its deliveries must be increased to 130,000 or 135,000 tons, or twice. For now potassium fertilizers are of lesser importance for the oblast, because the reserves of exchange potassium in soil are sufficient almost everywhere.

Analyzing the problem of annual deliveries of fertilizers, I would like to express the following views. Apparently, some planning workers have the incorrect opinion that, owing to frequent droughts, fertilizers are ineffective in Orenburg Oblast. Practice and scientific research confirm the opposite. With sufficient mineral fertilizers the guarantee of harvests increases. Unfortunately, however, suppliers disrupt even the shipment of the negligible stocks allocated to the oblast. In particular, in 9 months of the current year the Meleuz Chemical Plant fulfilled the delivery plan only 25 percent.

The problem of a zero-deficit humus balance has acquired special significance in the oblast's farming. In order to solve it, it is necessary to apply from 5 to 8 tons of organic fertilizers per hectare of arable land. Not only the quantitative, but also the qualitative, aspect of this matter is important. The used technology of manure application (carting to fields on dump trucks and spreading with bulldozer shovels) does not meet even the elementary requirements of the scientifically substantiated system of fertilizer application. As yet it is impossible to fundamentally change this technology. In the oblast there are 1,300 manure spreaders, while more than 8,000, including 2,000 of a carrying capacity of 10 to 16 tons, are needed. Furthermore, farms are short of loading facilities. Agricultural specialists in the oblast are awaiting manure spreaders of the PORT-16 brand and more powerful units from machine builders.

A few words about the introduction of new varieties of grain crops. An expansion of their areas always gives a big economic effect and production workers follow the appearance of selection novelties with interest. However, some specialists, expanding the sowing of more productive crops, forget Orenburg wheat and the fact that in its qualities it is greatly superior to what is grown in the central zone of the RSFSR. The country should obtain high-protein wheat with good baking qualities and such grain does well in our regions.

In the oblast in recent years extensive work on the transfer of seed breeding to an industrial basis has been done and integrated seed cleaning and drying centers have been built. There are already 20 of them and by the end of the five-year plan there will be 40--for every rayon seed breeding and experimental production farm. At the same time, the ZAV-40 and ZAV-20 grain cleaning units are being reconstructed. In brief, the first, but firm and perceptible, steps have been taken. For example, this year the oblast's kolkhozes and sovkhozes have increased the storage of first-category seeds to 56 instead of 17 percent during past years and have sharply lowered the volumes of seeds of mass reproductions. This will enable grain growers to reduce unproductive expenditures and to increase the yield of agricultural crops.

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